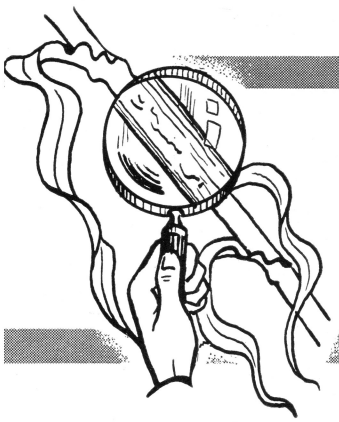
Iowa Farm Science

Volume 7 | Number 7 Article 5

1-1953

Farm Disease Outlook for 1953

Arden Sherf
Iowa State College



Plant Disease Outlook for 1953

Plant diseases have given us trouble for a long time, and they'll be with us in one form or another in 1953. Here are the highlights of what may happen under different conditions and, in turn, what to do.

by Arden Sherf

PLANT diseases have been around since the beginning of plant life. They've been cutting our crop yields for years and likely will do a repeat performance in 1953.

Our ancestors were mainly at the mercy of plant diseases. They regarded them as acts in reprisal for misdeeds. But with the coming of the science of plant pathology, the nature of plant diseases and, more important, how to control them became known.

Today we know how to reduce the tremendous losses of yield and quality our crops suffer each year. Until control measures are used, however, we'll continue to give a part of our agricultural productivity to disease each year.

It's becoming recognized that exciting yield increases, such as those resulting from hybrid seed corn, are no longer forthcoming in our major crops. Still, with our population increasing by about 7,000 persons each day, we'll need more total production to maintain our present standards of food consumption.

To get this greater production, we must aim at doing a better job of controlling plant diseases, insects and weeds. Each year these pests are costing us 6 to 7 billion dollars in lost food production.

In 1951 Iowa farmers lost 20 percent of their oats to crown rust. Last year the Septoria black stem disease took 12 percent of their oats. Other Iowa crops which often suffer yield and quality losses are corn, barley, clover, potatoes, apples and tomatoes (see also the article on garden diseases in this issue). Trees, flowers and ornamentals, too, are reduced in aesthetic value or are killed outright by a variety of parasitic diseases. Many can be prevented or reduced in severity.

ARDEN SHERF is assistant professor of botany and plant pathology.

Weather Important

Even though rain, humidity and temperature aren't directly responsible for disease, the outlook for 1953 does depend largely upon weather conditions in April, May and August. The fungus organisms that cause our most serious rusts, blights and leaf spots need proper temperatures and adequate moisture for growth and reproduction. Most of these fungi are entirely parasitic on our crops; crop damage is most severe when weather conditions favor fungus growth.

The experimental 30-day weather forecast now is giving us great help in predicting disease severity and probable crop damage. We can use these forecasts in recommending chemical applications for crop diseases which can be effectively controlled with sprays or dusts.

From careful study of records and field observations, plant pathologists know that cool, wet springs followed by frequent rainy periods in July and August foretell considerable loss—from leaf rust and stem rust in cereals, black stem of oats, corn leaf blight, alfalfa and clover leaf spots, tomato and potato late blight, and many fungus leaf spots of shade trees. Likewise, a warm, dry fall such as that of 1952 spells severe tree troubles next spring because of excessive drying during the winter or sudden fall freezing injury to unhardened wood.

Certain diseases we can count on seeing every year. They take a constant toll, generally undetected by even the most alert farmers. Unless such losses approach 15 percent, the tendency is to blame the weather, late planting, poor seed or poor fertility for lower-than-average yields. The real culprit, disease, often goes unrecognized.

The Prospects . . .

Whether 1953 will be a bad year for plant diseases depends largely upon the amount and frequency of rainfall this spring and summer.

With frequent rainfall and cool temperatures in early spring:

Oats will be planted late—thus favoring *crown rust* and *black stem.*

Apple scab and *fire blight* will likely be at least as serious as they have been in 1950-52.

Tree diseases like *elm leaf spot* and *sycamore anthracnose* will spread widely, resulting in early leaf fall in August.

Stands of early planted crops like *oats, barley* and *flax* may be poor because of *seed rot* if untreated seed is used.

Alfalfa and *red clover* will suffer from *fungus leaf spots* with yellowing and loss of forage value.

With average temperature and deficient rainfall:

Diseases will be held at a minimum

This is buckthorn—alternate host of oat crown rust. Note prominent veins and numerous berries. If there's buckthorn on your farm, get rid of it in order to reduce oat crown rust losses.

on early planted crops; *oat black stem* will be held at a low level.

Considerable damage will occur on *junipers, spruce* and *arbor-vitae* due to browning of entire branches or dropping of needles. The extreme lack of moisture last fall is responsible for this "winter burn."

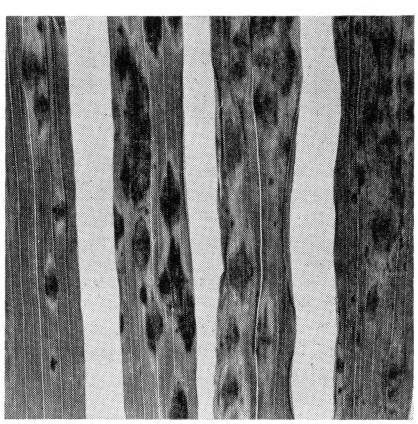
With below-normal temperature and frequent rainfall in June, July and August:

This combination offers the most serious threat to all crops—oats, corn, alfalfa, red clover, apples, potatoes, tomatoes and shade trees especially.

Oat rusts will be rampant in muggy weather with frequent showers and relatively low night temperatures.

Oat black stem will be most serious under these conditions.

Late blight of *tomatoes* and *potatoes* will undoubtedly develop if 10-hour periods below 75° F. and a relative humidity of 95 percent or above occur in July and August.



Septoria black stem on Cherokee oats —our most serious oat disease in 1952. Watch for large chocolate-colored blotches early in the season.

Important Diseases of Iowa Crops

Crop	Disease	Prevalence and loss (Past 4 years) Prevalence[1]	Yield loss (%)	Useful control measures
Oats	Crown rust	vc	15	Moderately resistant varieties; Clintafe, Cherokee, Nemaha, Mo. 0-205 Plant early, eradicate buckthorn
	Septoria black stem	vc	4	Tolerant varieties; Clintafe, Ajax, Shelby, Reselect Clinton
Corn	Leaf blight	vc	1	Rotation, fall plowing
	Smut	c	2	Rotation, some hybrids have moderate resistance
	Ear rots	r	4	Entire-growing-season hybrids
Alfalfa-Red clover	Fungus leaf spots	vc	6	Avoid low-lying fields, cut early as possible
Potatoes	Late blight	c	25	Resistant varieties, spray with nabam, zineb or fixed copper
Tomatoes	Late blight	c	20	Avoid low spots, spray with zineb or fixed copper, rotation
	Early blight	vc	15	Same as late blight
Apples	Fire blight	vc	10	Dormant pruning, in-bloom spray with weak bordeaux mix and zineb
	Scab	c	8	Pre-pink spray with lime-sulfur, calyx and cover sprays with wettable sulfur
Shade trees	Fungus leaf spots	c	....	Spray with bordeaux mix when leaves first open and again 14 days later
Evergreens	Browning, needle drop	c	....	Water heavily every 3 days in fall until ground freezes, apply complete fertilizer in spring

[1]vc, very common (11-50 percent of plants); c, common (3-10 percent of plants); r, rare (trace to 2 percent of plants).

The serious *corn leaf blight* epidemic of 1951 came as a result of cool, rainy August weather which permitted the fungus to grow and spread. Blight will be serious under such conditions.

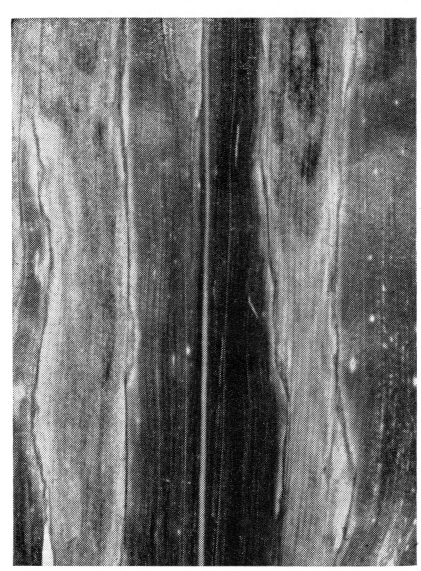
Soybean bacterial and *fungus* diseases are worse in rainy summers since they are spread by wind and machinery when leaves are wet.

In an attempt to predict the prevalence and seriousness of our most common Iowa plant diseases, we've prepared the accompanying table. It is based on past experiences with these diseases under average weather conditions. Appropriate control measures are suggested for each disease.

Although you can't know what diseases or weather conditions are in store for your farm this coming year, you can take certain steps to keep disease losses at a minimum regardless of weather. These steps are:

- Plant only best quality seed of varieties recommended for your locality. Use certified seed when available and use more than one variety.
- Clean and treat all oats, wheat, barley, flax and grasses used for seeding.
- Plant as early as possible in a good seedbed.
- Avoid using ground for the same crop in successive years. Disease organisms can live from one year to the next in the soil.
- Avoid cultivator damage to corn.
- Stay out of soybeans when leaves are wet.
- In wet summers, spray or dust potatoes with fungicides.
- See that evergreens have abundant soil moisture in the fall.
- Get rid of all buckthorn hedges and windbreaks to reduce oat crown rust losses.

The fight against plant diseases by plant scientists and the farm operator is a continuing one. Adequate research in the development of new control measures and resistant varieties, coupled with the application of such knowledge on the farm, will reduce potential disease losses to a minimum.



Helminthosporium leaf blight of corn. This disease can be severe in cool, wet seasons such as we had in 1951.